Issue: Relative Risk to Communities and Ecosystems from Uncharacteristic Wildland Fire

The intent of this issue is to:

- Identify where communities and their associated forestlands are at greatest risk from uncharacteristic wildfires;
- Identify areas where departure from historic fire regimes may lead to uncharacteristic wildland fires areas where damaging insects threaten forest health

Definition: Uncharacteristic Wildland Fire is defined as an increase in wildfire size, severity and resistance to control compared to that which occurred historically in the native system. The threat of these unnaturally intense wildfires has been increased with the accumulations of fuels developed from decades of aggressive fire suppression.

The term is used in Idaho Roadless Area Conservation FEIS (2008) and is from a definition in the Forest Service Cohesive Strategy for Protecting People and Sustaining Resources in a Fire-Adapted Ecosystem (2000).

Discussion: Initially, the core guidance team chose to use only the first layer shown below. However, after significant discussion within the Idaho SAFR Core Team and at the July 14, 2009 Stakeholder Meeting, attendees felt that while community wildfire risk was important, so were areas where uncharacteristic wildfires could endanger larger ecosystems. Initially, the Fire Regime Condition Class—which quantifies changes in fuels from historic conditions—was considered but, after significant discussion by the core guidance team, not selected to be part of this issue analysis. The reasons reflected a concern that the data was not meant to be used at the scale used for this assessment. After further discussion at the July 14 stakeholder meeting there was consensus that this was nonetheless important, and that updates in the data may address concerns about scale. Additional investigation determined this to be the case, and it was added as part of this issue analysis.

Data Used:

1) The **Relative Risk to Communities from Wildland Fire in Idaho** model, developed by the Idaho Interagency Wildland Fire Plan Working Group. A complete description of this model is available for download at: http://www.idahofireplan.org/images/Assessment.pdf. The assessment was completed by Jeff Jones, Landscape Ecologist, Flathead National Forest, and others from the State Fire Plan Working Group. This model considers relative wildland fire risk (weather, ignition probability, rate of spread), relative wildland fire hazard (fuel hazard, expected fuel moisture, slope effect on fire spread) and wildland urban interface (inhabited areas, communities at risk). This dataset identifies wildland urban communities from the Federal Register (66 Fed. Reg. 753, January 4, 2001). The SAFR Core Development Team felt this model best informed the issue of community risk to wildfire and is supported by the Interagency Fire Plan Working Group.

2) **Fire Regime Condition Classes (FRCC)**: This dataset shows changes in vegetation and fuels from historical conditions. From this map, inferences can be made to characterize forest lands with higher potential of uncharacteristic wildland fires (if ignitions were to occur). It is deemed the best indicator available of potential threat to forest systems from uncharacteristic fire. FRCC was used in the Idaho Roadless Rule to assess potential for uncharacteristic wildfires, and to evaluate the ability to treat fuels to reduce this potential. Information on this dataset can be found at: http://www.fs.fed.us/rm/pubs_other/rmrs_2004_menakis001.pdf.

Issue Process—Draft Three (Current):

The two datasets described in draft two below are still used, but the FRCC data is masked to only include forested areas. Stakeholders felt that when this issues layer is then added to the other threats issues, it won't overemphasize non-forested areas outside wildland-urban interface.

Issue Process—Draft Two (Old):

The Relative Risk to Communities from Wildland Fire in Idaho dataset was reclassified into five groups (1-5), from very low risk to very high risk, using natural breaks in the data. The FRCC data measures relative departure from historic fire regimes in three categories (1-3), from low departure to high. This data was reclassified into three categories with values of 1, 3 and 5.

Instead of adding these two datasets together, they were merged such that the highest value from either dataset became the value for that cell. For example, if either the Relative Risk to Communities from Wildland fire or the FRCC had a value of five for a particular cell, that cell received a value of five.

Issue Process—Draft One (Old): In the first draft of this issue map, only the first layer noted above was used. These data were stratified into five classes using natural breaks in the data, from low to high priority (values from 1 to 5).

Data Considered, but not used:

(1) Following the August 24, 2009 presentation to the Idaho Forest Supervisors and staff, we received comments that the increased wildfire risk from insect and disease mortality should be considered in this issue, and particularly that associated with mountain pine beetle infestations. We discussed this with fire ecologists, researchers, and fire managers and reviewed the research that was available on this topic. There is some agreement that there are two windows of concern: the first few years after the trees die when the needles are red, and then the 10-30 year period after mortality when trees begin to fall and contribute to surface fuel buildup. The extent to which the fire risk is increased in these windows appears to be variable and dependent on the amount and pattern of mortality, time since beetle outbreak, and other stand and site factors. Empirical studies to quantify the relationship between beetle outbreaks, stand structure, fuel dynamics, and fire risk are limited.

(2) The data available on insect and disease mortality in Idaho is limited to an annual survey that includes mapped areas of mortality along with the average number of trees per acre that have been killed in each area. We could find no empirical data or analysis that we could link to the insect and disease mortality mapping and data to identify and describe increased fire risk. With some additional analysis, an assessment of the increased wildfire risk could be developed using the annual insect and disease mortality survey. This would require correlating wildfire risk factors to stand and site conditions (such as amounts and patterns of mortality, time since beetle-kill, etc). Such analysis was outside of the scope of the SAFR (which was limited to use of existing Statewide data). This increased risk of wildfire from insect and disease mortality will be flagged as an additional data need in the SAFR. It will also be considered further in the Resource Strategy.

(3) Wildland Urban Interface (WUI) boundaries identified by the Healthy Forest Restoration Act (HFRA- 2003): The Relative Risk to Communities mapping used for this issue includes a WUI mapping (2001) that predates the WUI boundary definitions identified in the Healthy Forest Restoration Act (2003). HFRA encourages communities to specify WUI boundaries that best identify local risk; or communities may use a standard definition outlined in HFRA. In Idaho, counties are the recognized "community" in the National Fire Plan implementation. The process each county used to identify the WUI is not the same, and the dataset is therefore inconsistent from county to county. While very useful at the local level, the Core Development Team decided not to use the county generated dataset because the process was not consistent across the state and making relative assumptions statewide may provide misleading results.

The Core Team considered using the HFRA standard definition for WUI boundaries in this analysis. This definition was used in the recent Idaho Roadless Rule to identify Community Protection Zones (CMZ's). The Core Team compared statewide HFRA "standard definitions" WUI mapping with the WUI mapping from 2001 already included in the Communities at Risk model chosen for use. The HFRA-based mapping was very close to the WUI mapping in the Communities at Risk model and would not change the characterization of this issue. The Core Team felt the Communities at Risk model is the best tool available for characterizing the many integrated elements of community wildfire risk.

(4) Wildland Urban Interface (WUI) mapping per the Idaho Interagency Assessment of Wildland Fire Risk to Communities: This dataset identifies wildland urban communities from the Federal Register (66 Fed. Reg. 753, January 4, 2001) and inhabited areas from the 2000 Census. These areas were buffered by a distance of one mile to identify the wildland urban interface areas. This is already included within the model chosen for use.

Community Protection Zones (CPZ's) from Idaho Roadless Rule. We compared the CPZ's mapped in the Idaho Roadless Rule with the WUI used in the ***Idaho Relative Risk to Communities from Wildfire*** analysis that was used for this issue. The WUI boundaries used in the Idaho Relative Risk analysis include all of the Roadless Rule CPZ areas. The Idaho Relative Risk analysis considered additional variables (i.e. ignition history, slope, other factors) and therefore provides a more expanded characterization of fire risk to communities than the Roadless Rule's CPZ mapping.